IN THE CLAIMS

1(original). System for controlling a music spatialisation unit, characterised in that it comprises:

storage means for storing data representative of one or several sound sources and a listener of said sound sources, said data comprising position data corresponding to respective positions of the sound sources and the listener,

interface means for enabling a user to select the listener or a sound source and to control a change in the position data corresponding to the selected listener or sound source,

constraint solver means for changing, in response to the position data change controlled by the user, at least some of the position data corresponding to the element(s), among the listener and the sound sources, other than said selected listener or sound source, in accordance with predetermined constraints, and

means for delivering control data exploitable by a music spatialisation unit as a function of the position data corresponding to the sound sources and the listener.

2(original). System according to claim 1, wherein said music spatialisation unit is a remote controllable mixing device.

3(original). System according to claim 1, wherein said interface means comprises a graphical interface for providing a graphical representation of the listener and the sound sources.

4(original). System according to claim 3, wherein said interface means comprises means for moving said listener and/or said sound sources in said graphical representation in response to the

position data change controlled by the user and/or the position data change(s) performed by said constraint solver means.

5(original). System according to claim 1, wherein said interface means comprises means for enabling the user to selectively activate or deactivate said predetermined constraints.

6(original). System according to claim 1, wherein said interface means comprises means for sampling said position data change controlled by the user into elementary position data changes and for activating said constraint solver means each time an elementary position change has been controlled by the user.

7(original). System according to claim 1, wherein said predetermined constraints comprise at least one of the following constraints:

a constraint specifying that the respective distances between two given sound sources and the listener should always remain in the same ratio;

a constraint specifying that the product of the respective distances between each sound source and the listener should always remain constant;

a constraint specifying, that a given sound source should not cross a predetermined radial limit with respect to the listener; and

a constraint specifying that a given sound source should not cross a predetermined angular limit with respect to the listener.

8(original). System according to claim 1, wherein said constraint solver means performs a

constraint propagation algorithm having said position data as variables for changing said at least some of the position data.

9(original). System according to claim 8, wherein said predetermined constraints comprise functional and/or inequality constraints, and said constrant propagation algorithm is a recursive algorithm wherein:

inequality constraints are merely checked;

for each functional constraint, in response to a change in the value of one of the variables involved by the constraint, the other variables involved by the constraint are given arbitrary values such that the constraint be satisfied;

a variable that has been given an arbitrary value at a given step of the algorithm will not change value at any further step thereof; and

if, at a given step of the algorithm, an inequality constraint is not satisfied, or a functional constraint cannot be satisfied in view of an arbitrary value previously given to one of its variables, the algorithm is ended and the position data change controlled by the user is refused.

10(original). System according to claiin 1, wherein said control data depend on the position of each sound source with respect to the listener.

11(original). System according to claim 1, wherein said control data comprise, for each sound source:

a volume parameter depending on the distance (d) between said each sound source and the listener, and

a panoramic parameter depending on an angular position (β) of said each sound source with respect to the listener.

12(original). Music spatialisation system for controlling the spatial characteristics of a music produced by one or several sound sources, characterised in that it comprises:

a system according to claim 1 for producing control data depending on the respective positions of the sound sources and a listener of said sound sources, and

a spatialisation unit for mixing predetermined musical data representative of music pieces respectively produced by said sound sources as a function of said control data.

13(original). System according to claim 12, further comprising a sound reproducing device for reproducing the mixed musical data produced by said spatialisation unit.

14(original). Method for controlling a music spatialisation unit. characterised in that it comprises the following steps:

storing data representative of one or several sound sources and a listener of said sound sources, said data comprising position data corresponding to respective positions of the sound sources and the listener,

enabling a user to select the listener or a sound source and to control a change in the position data corresponding to the selected listener or sound source through an interface means,

changing, in response to the position data change controlled by the user, at least some of the position data corresponding to the element(s), among the listener and the sound sources, other than said selected listener or sound source, in accordance with predetermined constraints,

and

delivering control data exploitable by a music spatialisation unit as a function of the position data corresponding to the sound sources and the listener.

15(original). Method according to claim 14, wherein said music spatialisation unit is a remote controllable mixing device.

16(original). Method according to claim 14, further comprising the step of providing a graphical representation of the listener and the sound sources.

17(original). Method according to claim 16, further comprising the step of moving said listener and/or said sound sources in said graphical representation in response to the position data change controlled by the user and/or the position data change(s) performed by said changing step.

18(original). Method according to claim 14, further comprising the step of enabling the user to selectively activate or deactivate said predetermined constraints.

19(original). Method according to claim 14. further comprising the steps of sampling said position data change controlled by the user into elementary position data changes and activating said changing step each time an elementary position change has been controlled by the user.

20(original). Method according to claim 14, wherein said predetermined constraints comprise at least one of the following constraints:

a constraint specifying that the respective distances between two given sound sources and the listener should always remain in the same ratio;

a constraint specifying that the product of the respective distances between each sound source and the listener should always remain constant ;

a constraint specifying that a given sound source should not cross a predetermined radial limit with respect to the listener; and

a constraint specifying that a given sound source should not cross a predetermined angular limit with respect to the listener.

21(original). Method according to claim 14, wherein said changing step performs a constraint propagation algorithm having said position data as variables for changing said at least some of the position data.

22(original). Method according to claim 21, wherein said predetermined constraints comprise functional and/or inequality constraints, and said constraint propagation algorithm is a recursive algorithm wherein:

inequality constraints are merely checked;

for each functional constraint, in response to a change in the value of one of the variables involved by the constraint, the other variables involved by the constraint are given arbitrary values such that the constraint be satisfied;

a variable that has been given an arbitrary value of a given step of the algorithm will not change value at any further step thereof; and

if, at a given step of the algorithm, an inequality constraint is not satisfied, or a functional

constraint cannot be satisfied in view of an arbitrary value previously given to one of its variables, the algorithm is ended and the position data change controlled by the user is refused.

23(original). Method according to claim 14, wherein said control data depend on the position of each sound source with respect to the listener.

24(original). Method according to claim 14, wherein said control data comprise, for each sound source:

a volume parameter depending on the distance (d) between said each sound source and the listener, and

a panoramic parameter depending on an angular position ($\beta$) of said each sound source with respect to the listener.

25(original). Music spatialisation method for controlling the spatial characteristics of a music produced by one or several sound sources, characterised in that it comprises:

a method according to claim 14 for producing control data depending on the respective positions of the sound sources and a listener of said sound sources, and

a spatialisation step for mixing predetermined musical data representative of music pieces respectively produced by said sound sources as a function of said control data.

26(original). Method according to claim 25, further comprising the step of reproducing the mixed musical data produced by said spatialisation step.